## AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A chemically bonded biomaterial element composed of an inorganic cement, exhibiting minimal dimensional changes upon hardening and long-time use, improved mechanical properties and improved translucency characterised in an algorithm to describe the micro-structure, which is expressed as

$$\lambda = \frac{d * (1 - V_F)}{(V_F)}$$

where  $\lambda$  is the distance between filler particles of mean size d, and  $V_F$  is the volume content of non-reacted cement and added filler, and where  $\lambda = 10 \ \mu m$ .

- 2. (Currently Amended) A biomaterial element according to claim 1, characterised in that  $\lambda = 8 \ \mu m$   $\lambda \le 8 \ \mu m$ , even more preferred  $\lambda = 4 \ \mu m$   $\lambda \le 4 \ \mu m$  and most preferred  $\lambda = 2 \ \mu m$   $\lambda \le 2 \ \mu m$ .
- 3. (Original) A biomaterial element according to claim 1 characterised in that  $V_F$  is less than 50 %, preferably 5-45 % and even more preferred 15-35 %.
- 4. (Previously presented) A biomaterial element according to claim 1, characterised in that it exerts a pressure or tensile force of < 5 MPa, even more preferred < 2 MPa and even more preferred < 1 MPa, on a surrounding volume.

5. (Previously presented) A biomaterial element according to claim 1, characterised in that the inorganic phase is composed of Ca-aluminate and/or Casilicateand/or Ca-phosphate.

- 6. (Previously presented) A biomaterial element according to claim 1, characterised in that the inorganic phase is composed of phases in the CaO-Al<sub>2</sub>O<sub>3</sub> system, i. e. CaO, (CaO)<sub>3</sub>Al<sub>2</sub>O<sub>3</sub>, (CaO)<sub>12</sub>(Al<sub>2</sub>O<sub>3</sub>)<sub>7</sub>, CaOAl<sub>2</sub>O<sub>3</sub>, (CaO)(Al<sub>2</sub>O<sub>3</sub>)<sub>2</sub>, (CaO)(Al<sub>2</sub>O<sub>3</sub>)<sub>6</sub> and/or pure Al<sub>2</sub>O<sub>3</sub> with varying relative contents, where the preferred main phases areCaOAl<sub>2</sub>O<sub>3</sub> and (CaO)(Al<sub>2</sub>O<sub>3</sub>)<sub>2</sub> and the most preferred main phase is CaOAl<sub>2</sub>O<sub>3</sub>, a particle size of formed hydrates of these phases being below 3  $\mu$ m, even more preferred below1,  $\mu$ m and most preferred below 0.5  $\mu$ m.
- 7. (Previously presented) A biomaterial element according to claim 1, characterised in that it also comprises an organic phase of preferably polyacrylates and/or polycarbonates and preferably at a volume content of < 5 %.
- 8. (Previously presented) A biomaterial element according to claim 1, characterised in that added inert filler particles have a particle size below 5  $\mu$ m, even more preferred below 2  $\mu$ m.
- 9. (Original) A biomaterial element according to claim 8, characterised in that added filler particles consist of glass particles, apatites, brucite and/or bohmite.

10. (Previously presented) A biomaterial element according to claim 1, characterised in that it comprises in-situ formed apatite or some other phase that separates the formed hydrates of the main system.

- 11. (Previously presented) A biomaterial element according to claim 1, characterised in that a total porosity is below 10 %, even more preferred below 5 %, distributed on minipores having a diameter below 0.5  $\mu$ m, even more preferred below 0.1  $\mu$ m, to an extent of at least 90 % of the total porosity.
- 12. (Previously presented) A biomaterial element according to claim 1, characterised in that it is a dental material, preferably a dental filling material or a root filling material.
- 13. (Previously presented) A biomaterial element according to claim 1, characterised in that it is an orthopaedic material or a bone cement.
- 14. (Previously presented) A biomaterial element according to claim 1, characterised in that it is a component or is in granule form, preferably as a carrier material for drug delivery.
- 15. (Previously presented) A device in connection with the preparation of a chemically bonded biomaterial element according to claim 1, from a powdered material comprising a binder phase and a liquid reacting with the binder phase, characterised in that said device comprises a first container (5) that contains the powdered material, and a second container (3) that contains

said liquid reacting with the binder phase, and an openable closure (3) between the containers (5,3).